AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for managing energy supplied by an energy supply, the apparatus comprising:

   a) an energy accumulation device comprising:

      i) an energy accumulator, comprising a first energy accumulator for accumulating energy during a first cycle, and a second energy accumulator for accumulating energy during a second cycle; and

      ii) a controller configured to place the energy accumulator in electrical communication with the energy supply and with a load; and

   b) an energy transfer device in communication with the energy accumulation device and with the energy supply and configured to transfer accumulated energy from the energy accumulator to the energy supply.

2. (Original) The apparatus of claim 1 wherein the controller is configured to temporarily place the energy accumulator in electrical communication with the load and the energy supply.

3. (Original) The apparatus of claim 2 wherein the controller is configured to temporarily interpose the energy accumulator in series with the load and the energy supply.

4. (Original) The apparatus of claim 2 wherein the energy accumulator comprises a capacitor.

5. (Original) The apparatus of claim 4 wherein the energy transfer device is configured to permit discharge of the capacitor into the energy supply.

6. (Cancelled).

7. (Currently amended) The apparatus of claim 6 1 wherein the energy accumulation device and the energy transfer device are configured to cooperate to transfer accumulated energy from the second energy accumulator into the energy supply during the first cycle, and to transfer accumulated energy from an energy accumulator of the energy accumulation device other than the second energy accumulator into the energy supply during the second cycle.

8. (Original) The apparatus of claim 7 wherein the energy accumulator other than the second energy accumulator comprises the first energy accumulator.

9. (Original) The apparatus of claim 8 wherein the energy accumulation device is configured to cooperate to repeatedly execute the first and second cycles in succession.

10. (Original) The apparatus of claim 9 wherein the first and second energy accumulators comprise first and second capacitors respectively.

11. (Original) The apparatus of claim 10 wherein the controller of the energy accumulation device is configured to control a switching system to charge the first capacitor and discharge the second capacitor into the energy supply during the first cycle, and to charge the second capacitor and discharge the first capacitor into the energy supply during the second cycle.

12. (Original) The apparatus of claim 11 wherein the controller is configured to maintain a first switch closed while maintaining a second switch open during

the first cycle, to place the first capacitor in series with the energy supply and the load while isolating the first capacitor from the energy transfer device.

13. (Original) The apparatus of claim 12 wherein the controller is configured to maintain a third switch open while maintaining a fourth switch closed during the first cycle, to isolate the second capacitor from the load while placing the second capacitor in communication with the energy transfer device.

14. (Original) The apparatus of claim 13 wherein the controller is configured to maintain the first switch open while maintaining the second switch closed during the second cycle, to isolate the first capacitor from the load while placing the first capacitor in communication with the energy transfer device.

15. (Original) The apparatus of claim 14 wherein the controller is configured to maintain the third switch closed while maintaining the fourth switch open during the second cycle, to place the second capacitor in series with the energy supply and the load while isolating the second capacitor from the energy transfer device.

16. (Original) The apparatus of claim 15 wherein the controller is configured to adjust respective durations for which the first switch and the third switch are maintained closed to charge the first and second capacitors respectively, in response to a charge time control signal.

17. (Original) The apparatus of claim 16 further comprising a charge time control signal generator configured to generate the charge time control signal.

18. (Original) The apparatus of claim 17 wherein the charge time control signal generator is configured to generate the charge time control signal in response to an adjustable setting of a throttle control.

19. (Original) The apparatus of claim 18 further comprising the throttle control, the throttle control comprising a variable resistor, and wherein the charge time control signal generator comprises an analog-to-digital converter configured to

generate the charge time control signal in response to a resistance of the variable resistor.

20. (Original) The apparatus of claim 15 wherein the controller is configured to adjust respective durations for which the second switch and the fourth switch are maintained closed to discharge the first and second capacitors respectively, in response to a discharge time control signal.

21. (Original) The apparatus of claim 20 further comprising a discharge time control signal generator configured to generate the discharge time control signal.

22. (Original) The apparatus of claim 21 wherein the discharge time control signal generator is configured to generate the discharge time control signal in response to a voltage of the discharge of the first and second capacitors.

23. (Original) The apparatus of claim 21 wherein the discharge time control signal generator comprises an analog-to-digital converter.

24. (Original) The apparatus of claim 11 further comprising the switching system, wherein the switching system comprises a transistor switching system.

25. (Original) The apparatus of claim 15 further comprising the first, second, third and fourth switches, each of which comprises a respective transistor.

26. (Original) The apparatus of claim 25 wherein each of the first, second, third and fourth switches further comprises a driver for operating each of the transistors in response to control signals from the controller.

27. (Original) The apparatus of claim 11 further comprising the switching system, wherein the switching system comprises a mechanical switching system.

28. (Original) The apparatus of claim 1 wherein the controller comprises a microcontroller.

29. (Original) The apparatus of claim 1 wherein the energy transfer device comprises an input port for receiving the accumulated energy from the energy accumulation device in the form of an electrical discharge.

30. (Original) The apparatus of claim 29 wherein the energy transfer device comprises a second controller configured to increase an output voltage at an output port of the energy transfer device in communication with the energy supply, to cause the output voltage to tend to a desired voltage exceeding a voltage of the energy supply.

31. (Original) The apparatus of claim 30 wherein the energy transfer device comprises an inductor, and wherein the second controller is configured to increase the output voltage by allowing current to flow from the input port through the inductor until the output voltage is at least the desired voltage.

32. (Original) The apparatus of claim 31 wherein the energy transfer device further comprises a transistor in communication with the inductor, and wherein the second controller is configured to control the transistor to control the current through the inductor.

33. (Original) The apparatus of claim 31 wherein the energy transfer device further comprises an output voltage monitor configured to monitor the output voltage, and wherein the second controller is configured to control the current through the inductor in response to the output voltage.

34. (Original) The apparatus of claim 30 wherein the energy transfer device comprises an isolator configured to prevent current from flowing from the energy supply into the output port of the energy transfer device.

35. (Original) The apparatus of claim 34 wherein the isolator comprises a diode.

36. (Currently amended) An apparatus for managing energy supplied by an energy supply, the apparatus comprising:

a) means for accumulating energy, in electrical communication with the energy supply and with a load, wherein the means for accumulating comprises a first means for accumulating energy during a first cycle and a second means for accumulating energy during a second cycle; and

b) means for transferring accumulated energy from the means for accumulating energy to the energy supply.

37. (Original) The apparatus of claim 36 further comprising means for temporarily placing the means for accumulating energy in electrical communication with the load and the energy supply.

38. (Original) The apparatus of claim 37 wherein the means for temporarily placing comprises means for temporarily interposing the means for accumulating energy in series with the load and the energy supply.

39. (Original) The apparatus of claim 37 wherein the means for accumulating comprises a capacitor.

40. (Original) The apparatus of claim 39 wherein the means for transferring comprises means for permitting discharge of the capacitor into the energy supply.

41. (Cancelled).

42. (Currently amended) The apparatus of claim **36** wherein the means for transferring comprises:

means for transferring energy from the second means for accumulating into the energy supply during the first cycle; and

means for transferring energy from a means for accumulating other than the second means for accumulating into the energy supply during the second cycle.

43. (Original) The apparatus of claim 42 wherein the means for accumulating other than the second means for accumulating comprises the first means for accumulating.

44. (Original) The apparatus of claim 43 further comprising means for repeatedly executing the first and second cycles in succession.

45. (Original) The apparatus of claim 44 wherein the first and second means for accumulating comprise first and second capacitors respectively.

46. (Original) The apparatus of claim 45 wherein the means for repeatedly executing comprises means for controlling a switching system to charge the first capacitor and discharge the second capacitor into the energy supply during the first cycle, and to charge the second capacitor and discharge the first capacitor into the energy supply during the second cycle.

47. (Original) The apparatus of claim 46 wherein the means for controlling comprises means for maintaining a first switch closed while maintaining a second switch open during the first cycle, to place the first capacitor in series with the energy supply and the load while isolating the first capacitor from an energy transfer device.

48. (Original) The apparatus of claim 47 wherein the means for controlling further comprises means for maintaining a third switch open while maintaining a fourth switch closed during the first cycle, to isolate the second capacitor from the load while placing the second capacitor in communication with the energy transfer device.

49. (Original) The apparatus of claim 48 wherein the means for controlling comprises means for maintaining the first switch open while maintaining the second switch closed during the second cycle, to isolate the first capacitor from the load while placing the first capacitor in communication with the energy transfer device.

50. (Original) The apparatus of claim 49 wherein the means for controlling further comprises means for maintaining the third switch closed while maintaining the fourth switch open during the second cycle, to place the second capacitor in series with the energy supply and the load while isolating the second capacitor from the energy transfer device.

51. (Original) The apparatus of claim 50 further comprising means for adjusting respective durations for which the first switch and the third switch are maintained closed to charge the first and second capacitors respectively, in response to a charge time control signal.

52. (Original) The apparatus of claim 51 further comprising means for generating the charge time control signal.

53. (Original) The apparatus of claim 52 wherein the means for generating the charge time control signal comprises means for generating the charge time control signal in response to an adjustable throttle setting.

54. (Original) The apparatus of claim 50 further comprising means for adjusting respective durations for which the second switch and the fourth switch are maintained closed to discharge the first and second capacitors respectively, in response to a discharge time control signal.

55. (Original) The apparatus of claim 54 further comprising means for generating the discharge time control signal.

56. (Original) The apparatus of claim 55 wherein the means for generating the discharge time control signal comprises means for generating the discharge time control signal in response to a voltage of the discharge of the first and second capacitors.

57. (Original) The apparatus of claim 46 wherein the means for controlling a switching system comprises means for controlling a transistor switching system.

58. (Original) The apparatus of claim 50 further comprising the first, second, third and fourth switches, and wherein each of the switches comprises a respective transistor.

59. (Original) The apparatus of claim 46 wherein the means for controlling a switching system comprises means for controlling a mechanical switching system.

60. (Original) The apparatus of claim 36 wherein the means for transferring comprises means for receiving the accumulated energy from the means for accumulating in the form of an electrical discharge.

61. (Original) The apparatus of claim 60 further comprising means for increasing an output voltage of the means for transferring, to cause the output voltage to tend to a desired voltage exceeding a voltage of the energy supply.

62. (Original) The apparatus of claim 61 wherein the means for increasing the output voltage comprises means for allowing current to flow from the means for receiving through a means for inducting until the output voltage is at least the desired voltage.

63. (Original) The apparatus of claim 62 further comprising means for monitoring the output voltage and means for controlling the current through the inductor in response to the output voltage.

64. (Original) The apparatus of claim 61 further comprising means for preventing current from flowing from the energy supply into means for transferring.

65. (Currently amended) A method of managing energy supplied by an energy supply, the method comprising:

a) accumulating energy in an energy accumulator in electrical communication with the energy supply and with a load, wherein accumulating comprises accumulating energy in a first energy

accumulator during a first cycle, and accumulating energy in a second energy accumulator during a second cycle; and

b) transferring accumulated energy from the energy accumulator to the energy supply.

66. (Original) The method of claim 65 wherein accumulating comprises temporarily placing the energy accumulator in electrical communication with the load and the energy supply.

67. (Original) The method of claim 66 wherein temporarily placing comprises temporarily interposing the energy accumulator in series with the load and the energy supply.

68. (Original) The method of claim 66 wherein temporarily placing the energy accumulator comprises temporarily placing a capacitor in electrical communication with the load and the energy supply to charge the capacitor.

69. (Original) The method of claim 68 wherein transferring comprises discharging the capacitor into the energy supply.

70. (Cancelled).

71. (Currently amended) The method of claim 65 wherein transferring comprises transferring accumulated energy from the second energy accumulator into the energy supply during the first cycle, and transferring accumulated energy from an energy accumulator other than the second energy accumulator into the energy supply during the second cycle.

72. (Original) The method of claim 71 wherein the energy accumulator other than the second energy accumulator comprises the first energy accumulator.

73. (Original) The method of claim 72 wherein accumulating and transferring comprise repeatedly executing the first and second cycles in succession.

74. (Original) The method of claim 73 wherein the first and second energy accumulators comprise first and second capacitors respectively.

75. (Original) The method of claim 74 wherein executing comprises controlling a switching system to charge the first capacitor and discharge the second capacitor into the energy supply during the first cycle, and to charge the second capacitor and discharge the first capacitor into the energy supply during the second cycle.

76. (Original) The method of claim 75 wherein controlling comprises, during the first cycle, maintaining a first switch closed while maintaining a second switch open, to place the first capacitor in series with the energy supply and the load while isolating the first capacitor from an energy transfer device.

77. (Original) The method of claim 76 wherein controlling further comprises, during the first cycle, maintaining a third switch open while maintaining a fourth switch closed, to isolate the second capacitor from the load while placing the second capacitor in communication with the energy transfer device.

78. (Original) The method of claim 77 wherein controlling comprises, during the second cycle, maintaining the first switch open while maintaining the second switch closed, to isolate the first capacitor from the load while placing the first capacitor in communication with the energy transfer device.

79. (Original) The method of claim 78 wherein controlling further comprises, during the second cycle, maintaining the third switch closed while maintaining the fourth switch open, to place the second capacitor in series with the energy supply and the load while isolating the second capacitor from the energy transfer device.

80. (Original) The method of claim 79 further comprising adjusting respective durations for which the first switch and the third switch are maintained closed

to charge the first and second capacitors respectively, in response to a charge time control signal.

81. (Original) The method of claim 80 further comprising generating the charge time control signal.

82. (Original) The method of claim 81 wherein generating the charge time control signal comprises generating the charge time control signal in response to an adjustable throttle setting.

83. (Original) The method of claim 79 further comprising adjusting respective durations for which the second switch and the fourth switch are maintained closed to discharge the first and second capacitors respectively, in response to a discharge time control signal.

84. (Original) The method of claim 83 further comprising generating the discharge time control signal.

85. (Original) The method of claim 83 wherein generating the discharge time control signal comprises generating the discharge time control signal in response to a voltage of the discharge of the first and second capacitors.

86. (Original) The method of claim 75 wherein controlling a switching system comprises controlling a transistor switching system.

87. (Original) The method of claim 79 wherein each of the first, second, third and fourth switches comprises a respective transistor.

88. (Original) The method of claim 75 wherein controlling a switching system comprises controlling a mechanical switching system.

89. (Original) The method of claim 65 wherein transferring comprises receiving the accumulated energy from the energy accumulation device at an input port of an energy transfer device in the form of an electrical discharge.

90. (Original) The method of claim 89 further comprising increasing an output voltage at an output port of the energy transfer device in communication with the energy supply, to cause the output voltage to tend to a desired voltage exceeding a voltage of the energy supply.

91. (Original) The method of claim 90 wherein increasing the output voltage comprises allowing current to flow from the input port through an inductor until the output voltage is at least the desired voltage.

92. (Original) The method of claim 91 further comprising monitoring the output voltage and controlling the current through the inductor in response to the output voltage.

93. (Original) The method of claim 90 further comprising preventing current from flowing from the energy supply into the output port of the energy transfer device.

94. (Original) A computer-readable medium storing codes for directing a processor circuit to cause the method of claim 65 to be carried out.

95. (Original) A signal embodied in a communications medium, the signal comprising code segments for directing a processor circuit to cause the method of claim 65 to be carried out.